



July 2006

## **DRAFT: Bachelor of Applied Science in Radiation and Imaging Sciences – Bellevue Community College**

### **Introduction**

Bellevue Community College (BCC) is seeking Higher Education Coordinating Board (HECB) approval to offer a Bachelor of Applied Science in Radiation and Imaging Sciences (RIS). Bellevue Community College was one of four colleges selected by the State Board for Community and Technical Colleges through a competitive process to develop a baccalaureate level program designed to provide a baccalaureate pathway for students who receive an associate degree in an applied field.

The Radiation and Imaging Sciences program is being proposed in response to increasing complexity of the field, changing employer preferences, and a need for qualified managers. With implementation of the RIS program, BCC would be the only institution in Washington to provide students who received initial training at the associate level, a pathway to the baccalaureate degree within the discipline.

### **Relationship to Institutional Role and Mission and the Strategic Master Plan**

The primary mission of Bellevue Community College is to provide high quality and flexible education programs that are consistent with the needs of students and support the economic, social, and cultural needs of the community. The program is responsive to this mission by providing career advancement opportunities to graduates of the BCC programs and other programs in the state. In addition, the program would contribute to the community by preparing well-qualified healthcare workers.

Many elements of this program align well with the mission of BCC. However, the college's new authority to grant bachelor's degrees, even when limited to a single program, represents a significant expansion of the institution's role and mission. Developing a degree program at a new level has implications for accreditation and potential impacts on students, faculty, and institutional resources. These implications and impacts are discussed later in this summary.

The program goals are consistent with those of the *2004 Strategic Master Plan* in that they provide opportunities for students to earn degrees and respond to the state's economic needs. The proposed degree program would respond to changing demand within the healthcare industry.

Specifically, the program would meet the individual needs of students by providing access to a degree program that would enhance their skills and provide opportunities for career advancement. More broadly, the program responds to the economic needs of the state by providing a trained workforce for a key economic sector.

## Program Need

The proposal responds to needs expressed by students, employers, and community stakeholders. The *State and Regional Need Assessment* (HECB) finds a substantial gap between the supply of prepared graduates in the healthcare programs and projected employer demand for qualified workers. While roughly half the demand for additional training at the baccalaureate and graduate level is in nursing, most healthcare fields show some level of demand. HECB analysis estimates that 33 of the 140 projected annual openings in radiation and imaging technologies would require a bachelor's degree; however, this estimate is based on the current workforce and does not account for changes in employer preferences or other changes leading to a demand for increasing skill levels. The American Registry of Radiologic Technologists (AART) estimates that nearly one-third of current technologists will need to upgrade their skills to the baccalaureate level.

The number of job openings in radiation and imaging occupations is increasing rapidly. Currently, Washington employs 5,000 radiation and imaging technologists. The number of positions is expected to grow by 21 to 35 percent by 2012. In addition, there is a high vacancy rate for positions in the field (5 to 10 percent). Gaps also are apparent at the supervisory level. Industry surveys indicate that many of the nearly 900 supervisory positions in Washington are filled by under-qualified technologists. The need for supervisors is growing as well with over 300 new positions expected by 2012.

As indicated, changes within the industry are pressing for more workers with increased levels of education. This manifests itself in two key ways. First, there is a need to develop managers with an understanding and working knowledge of the various diagnostic imaging procedures. Second, employers prefer workers who hold multiple certifications. According to the U.S. Department of Labor's *Occupational Outlook Handbook*, radiologic technologists who are experienced in complex diagnostic imaging procedures, such as CT or MRI, have better employment opportunities, as employers seek to control costs by using multi-skilled employees.

Finally, the American Society of Radiologic Technologists is calling for the bachelor's degree to become the entry-level degree for radiation therapists. This recommendation is based on many of the factors listed above as well as a belief that the higher levels of education would lead to better patient care. This change is occurring in several other countries. A key finding of the ASRT report is that many workers enter the field without all the technical skills expected of them. In addition, the report notes that the more robust general education component at the baccalaureate level better equips professionals "to meet changing needs and circumstances of their occupations"<sup>1</sup>.

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<sup>1</sup> Advancing Radiation Therapy Education and Practice, American Society of Radiologic Technologists. 1999.

Student demand for the program is based on statewide surveys of working technologists and students in radiation and imaging technology programs. Nearly 80 percent of the 169 respondents indicated an interest in the baccalaureate program. Currently, BCC graduates 84 students at the associate level per year across four specialty areas within the radiation and imaging sciences. One hundred sixty-one students per year graduate from the six other imaging programs in the state.

The proposed program also would draw students who are currently working in the field. Total employment in radiation and imaging science occupations is over 5,000, with a workforce of 1,600 in King County alone.

Community demand was assessed using employer surveys, employer focus groups, and letters of support. The employer survey indicated that while the bachelor's degree was not required at entry level, it is required for upper-level management positions. In addition, employers expressed a clear preference for the bachelor's degree for mid-level management positions. More broadly, employers indicated that not enough baccalaureate trained workers were available to meet their organizational needs; and the greatest barrier to moving people into supervisory and leadership positions, is finding the time to train them. Employers indicated a desire to hire graduates of the BAS program and to pay to send their workers to the program.

In addition to the survey, BCC conducted a focus group with current supervisors and managers. The focus group confirmed many of the factors discussed above, most notably a trend pressing for higher levels of education and increased complexity of the work. On a more practical note, the group indicated an increased level of compensation for workers who possess a bachelor's degree.

Currently, Seattle University is the only baccalaureate program in Washington that prepares students for certification in radiation and imaging sciences (diagnostic ultrasound). The program does not articulate with the associate level programs; instead it provides a baccalaureate level pathway to initial certification. The BCC program would be the first in the state to offer a pathway for students who have received their initial training at the associate level.

## **Program Description**

The proposed BAS in Radiation and Imaging Sciences would provide a baccalaureate level opportunity for students who have either (1) completed associate level training in radiation technology, diagnostic ultrasound, or radiation therapy, or (2) earned a certificate in nuclear medicine. Graduates would be prepared for management positions or certification in higher level diagnostic techniques.

Students who hold a certificate in one of the specialties listed above and have completed college-level coursework in English composition, intermediate algebra (pre-college), anatomy and physiology, humanities, and social science, would be eligible to apply. Students also would need a cumulative GPA of 2.5 or higher and would be required to submit a writing sample and two letters of reference.

Once admitted to the program, students would have the opportunity to specialize in imaging management or imaging technology. In either case, students would be exposed to some coursework in the other specialty. In all cases, students would complete a set of general education requirements, including 15 credits in communication, 15 credits of quantitative reasoning, 15 credits of natural science (major requirements at the associate level are well beyond the general education requirement), 15 credits in responsibility (ethics, group process, self-assessment), and 15 credits in cultural traditions for a total of 75 general education credits.

Program graduates would gain skills in supervision and management and enhance their technical skills. In addition, graduates would be prepared to enter and complete graduate programs. BCC has been working with the University of Washington Health Administration Program to ensure their BAS graduates would have the requisite coursework and competencies to successfully enter and complete the Masters in Health Administration. Dr. Will Welton, program director for the Master in Health Administration program at the University of Washington, reviewed the curriculum and indicated that graduates of the program would be eligible for entry into the executive MHA program.

In the first year, the program would accommodate 20 FTE (40 headcount) students. The program would grow to approximately 50 FTE (95 headcount) students by the fourth year. The department estimates the program could be as large as 34 FTE students in the first year and could reasonably be expected to grow to 62 FTE students by the fourth year.

The program proposal includes clearly-defined student learning objectives for both the general education component of the program and the program as a whole. During the program, students would be assessed through a variety of mechanisms including their regular coursework, evaluation of the practicum, assessment of a capstone course, and practice-based and knowledge-based assessments.

The program goals are clearly defined and aligned with student learning outcomes. The program is assessed through a number of approaches, including typical strategies such as course evaluations, student surveys, graduate follow-up, employer surveys, and analysis of retention and completion data. In addition, the program will survey faculty and conduct focus groups with students.

In addition to the standard student and program assessment, the program is deemed a pilot degree program; the institution will examine the impact of the program on other programs and resources at the college. The SBCTC and the HECB also will be conducting evaluations of the programs. Finally, as the first degree at a new level, the proposed degree program will represent a substantive change that requires review by the Northwest Commission on Colleges and Universities (NWCCU), the regional accrediting body.

## Diversity

The proposal identifies strategies to build on the success of existing programs at Bellevue Community College to attract and retain a diverse student body. Specifically, the program would work to recruit graduates of the college's associate degree programs with a special emphasis on students of color. In addition, the institution would work with local employers and clinical sites to promote the program and recruit students.

## External Review

The program was reviewed by two external experts: (1) Dr. Duane Akroyd, Coordinator Health Professions Education Department of Adult and Higher Education, North Carolina State University; and (2) Richard Carlton, M.S., R.T.(R)(CV), FAERS, Grand Valley State University Radiologic and Imaging Sciences. Both reviewers expressed support for the program citing the need for the program expressed by students and employers as well as the close articulation with the associate level program.

Dr. Akroyd noted a number of strengths in the proposal and reinforced evidence presented in the proposal around the need for additional training to better prepare new technologist and the difficulties in keeping up with changes within the profession. Akroyd also made two key suggestions: (1) a tighter admission process; (2) greater clarity in the specific courses a student would need to take in order to receive particular advanced certifications. The program developers responded to the first concern by modifying the admission process to better recognize the need to allow for potentially selective admissions. In addition, they agreed to clarify the course sequences in the written materials for students and in the curriculum as it becomes more fully developed.

Mr. Carlton also supported the program, applauding the assessment of student demand and the efforts to articulate the program with other community and technical college programs. Carlton raised a question about "radiologist assistant" programs that are now starting around the country. Those programs are at the baccalaureate level as the minimum. The program developers responded that the institution must already have baccalaureate authority in order to develop such a program, and that they do have an interest in adding such a program in the future. Carlton also asked for clarification in the curriculum around the capstone requirement and specific content. The program developers responded that the capstone was required under either specialization, and the content was indeed incorporated into the coursework outlined in the proposal. Finally, Carlton raised questions about the funding for the library improvements and the program chair. The program responded that the library funding was appropriate as an addition to the current level of support provided for the two-year programs. With regard to the program chair, the concern that the funding would not be sufficient to attract a doctorate-qualified chair appears to be moot at the moment, as the person is currently employed at the institution.

## **Program Costs**

Prior to the first year of the program, the institution would receive planning funds, and no students would be enrolled in the program during the planning year. In the first implementation year of the program with an entering class of 20 FTE students, costs are estimated to be \$19,269 per FTE. At full enrollment in the fourth year (50 FTE students), the cost would be \$8,252 per FTE. The average direct cost of instruction for baccalaureate programs in health sciences at the regional institutions is roughly \$11,000 per FTE, including 4,500 to 5,200 in indirect cost estimates.

The program would draw on the current faculty. The program estimates a contribution of faculty time equivalent to 1.73 FTE faculty in the first year and 2.96 FTE faculty in the fourth year. Administrative and clerical costs are based on 1.5 FTE, and 2.2 FTE staff is included for curriculum development and academic support.

The program includes funding for library improvements, including a .25 FTE librarian who would be responsible for the development of the collection for the BAS program. Funding of \$38,000 is provided for purchase of books and materials. In addition, \$5,000 per year would support professional journals and subscriptions. Funding is also provided for the improvement of the college's core collection. This includes one-time funding of \$100,000 to improve the collection and an increase in ongoing funding of \$25,000 per year. The institution also receives \$5,000 from Perkins funding to support the Cumulative Index for Nursing and Allied Health Literature. Finally, students have full access to the Eastern Washington University library.

## **Staff Analysis**

The proposed program would support the unique role and mission of the institution. The program builds upon a successful set of programs at the associate level. In addition, it is responsive to the needs of employers and students by providing a pathway that would allow students to continue to build their skills and prepare for higher levels of expertise and responsibility.

The program also responds to the master plan goals of providing opportunities for students to earn degrees and respond to the economic needs of the state by providing trained workers who are able to respond to change within the industry. The program would create a pathway to the baccalaureate degree for students who do not currently have this option within their professional field of study. As a result of providing access to the bachelor's degree, the program also would open the door to graduate study for these students.

The program is consistent with the purpose of HB 1794, providing an applied bachelor's degree pathway to students who have completed a technical associate degree program and do not have ready access to other bachelor's degree programs.

The proposed degree program includes an assessment approach with well-defined student learning outcomes and multiple measures of student achievement. The program would be subject to a well-defined review process that promotes feedback from various constituents. In addition, due to the pilot status of the degree program, the program would be subject to scrutiny from the HECB, the SBCTC, and the NWCCU review processes.

The program responds to demonstrated student, employer and community needs and is consistent with the state and regional needs assessment and the institution's own assessment of need. In fact, the enrollment estimates appear relatively conservative. While a first year class of 20 to 25 FTE would be reasonable, the program should be allowed to grow to 60 FTE in year four, if student demand allows.

Adding bachelor degree granting authority to BCC's mission has implications for accreditation and potential impacts on students, faculty, and institutional resources. Using planning money during the first year of the pilot to expand library resources and student support services helps position BCC to best support students, faculty, and staff in the upper division, and it successfully fulfills their stated mission of providing high quality and flexible education programs that are consistent with the needs of the student.

The program would not duplicate existing programs and would be offered at a reasonable cost.

### **Recommendation**

Based on careful review of the Bellevue Community College's program proposal and supplemental sources, HECB staff and the board's education committee recommend that the full board approve it.

**RESOLUTION NO. 06-20**

WHEREAS, Bellevue Community College proposes to offer a Bachelor of Applied Science in Radiation and Imaging Sciences; and

WHEREAS, The program is consistent with the purpose of HB 1794, providing an applied bachelor's degree pathway to students who have completed a technical associate degree program and do not have ready access to other bachelor's degree programs; and

WHEREAS, The program is responsive to the needs of employers and to students by providing a pathway that would allow students to continue to build their skills and prepare for higher levels of expertise and responsibility; and

WHEREAS, The program responds to demonstrated student, employer and community needs and is consistent with the state and regional needs assessment and the institution's own assessment of need; and

WHEREAS, The recruitment and diversity plan are appropriate to the program; and

WHEREAS, the college is committed to providing the services and support necessary to expand its institutional role and mission by offering a baccalaureate program; and

WHEREAS, The program has undergone an extensive development and review process, which included input from the community and technical colleges, employers, and external content experts; and

WHEREAS, The costs are reasonable;

THEREFORE, BE IT RESOLVED, That the Higher Education Coordinating Board approves the Bachelor of Applied Science (BAS) in Radiation and Imaging Sciences.

Adopted:

July 27, 2006

Attest:

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Gene Colin, Chair

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Bill Grinstein, Vice Chair